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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,206	06/29/2001	Michal Cierniak	2207/11235	7577

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EXAMINER
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TRUONG, LECHI

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/896,206	<b>Applicant(s)</b> CIERNIAK, MICHAL	
	<b>Examiner</b> LeChi Truong	<b>Art Unit</b> 2126	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. Claims 1-16 are presented for the examination

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 7, 8, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US. Patent 5,754,862) in view of Jordan (US. Patent 6,016,392).

3. As to claim 1, Jones teaches the invention substantially as claimed including: a class (the class, col 5, ln 15-53/col 7, ln 1-25col 12, ln 35-67), implement (implement, col 5, ln 44-67), a function (the function members 603,604,605,607, col 12, ln 35-67/ Fig. 6), an vtable (virtual function table, col 5, ln 15-53/col 7, ln 1-25col 12, ln 35-67/ Fig. 6), a first pointer (B1:fall 1 603, col 12, ln 35-67/ Fig. 6), an object (the data structure 601, col 12, col 5, ln 15-53/col 7, ln 1-25col 12, ln 35-67/ Fig. 6), an instance of the class( instance of class, col 5, ln 43-59), second pointer( vfptr pointer, col 7,ln 1-4/A1::vfptr, col 11, ln 50-67, col 12, ln 35-67, Fig. 6).

4. Jones does not explicit teach the term " interface" and vtable as interface vtable, the second pointer of an object configured to point to the interface vtable associated with the interface. However, Jordan teaches " interface" and vtable as interface vtable (interface, an interface ID with the Vtable 416 col 3, ln 33-67/ Fig. 4), the second pointer of an object

configured to point to the interface vtable associated with the interface (an Interface list 314 specifies the interfaces that a class supports... pairing an interface ID (IID) with the vtable 416 that implement the interface, a vtable 415 is an array pointers to the functions that implement the interface, col 3, ln 35-45/ Fig. 4).

5. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of Jones and Jordan because Jordan's interface, an interface ID with the Vtable 416, an Interface list 314 specifies the interfaces that a class supports... pairing an interface ID (IID) with the vtable 416 that implement the interface, a vtable 415 is an array pointers to the functions that implement the interface would provide an interface list with information about which interfaces are supported on each class and relieve individual designers of the need to device complicated schemes to reduce memory consumption.

6. **As to claim 7**, Jones does not explicit teach the term the interface vtable is indexed by the name of the function. However, Jordan teaches interface vtable is indexed by the name of the function (an pairing interface ID with the Vtable 416, col 3, ln 33-67/ Fig. 4).

7. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching Jones and Jordan because Jordan's an pairing interface ID with the Vtable 416 would identify which interfaces are supported on each class.

8. **As to claim 8**, it is and apparatus claim of claim 1; therefore, it is rejected for the same reasons as claim 1 above. In additional, Jones teaches a invoke a function (invoking the function member, col 20, ln 1-34).

9. Jones does not teach the term a request. However, Jordan teach request (a request/call, col 5, ln 45-67).

10. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of Jones and Jordan because Jonrdan's call would invoke the member function of an object to implement an interface.

11. **As to claims 10**, it is apparatus claims of claims 8 ; therefore, it is rejected for the same reasons as claims 8 above.

12. Claims 2, 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US. Patent 5,754,862) in view of Jordan (US. Patent 6,016,392) and further in view of AP (Arrays, pointers, pointer arithmetic).

13. **As to claim 2**, Jones and Jordan do not teach a third pointer points to a canonical base address. However, AP teaches a third pointer points to a canonical base address (the new pointer point to X [1], sec 7.3, page 1-3).

14. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of Jones, Jordan and AP because AP's the new pointer point to X [1] would allocate the specified number of contiguous cells of the indicated type.

15. **As to claim 3**, AP teaches the pointer is located at a predefined offset from the second pointer, and adjacent to the second pointer (the new pointer equals the original value of the pointer by increased by the size of type involved (sec: 7.3, page 1).

16. **As to claim 4**, AP teaches the third pointer is adjacent to the second pointer (the third pointer is adjacent to the second pointer teaches X+0, X+1 pointer (sec 7.3, page 1-3).

17. Claims 5,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US. Patent 5,754,862) in view of Jordan (US. Patent 6,016,392) and further in view of Kathleen Fisher et al (What is an Object – Oriented Programming Language?)

18. As to **claim 5**, Jones and Jordan do not explicit teach the term a class vtable, fourth pointer (&(B3:Fa11. Fig. 14). However, Kathleen teaches a class vtable, fourth pointer (class's Vtable, the A vtable contains pointers to the methods, sec: 2.3, page 7/ Fig. 1/Fig. 2).

19. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of Jones, Jordan and Kathleen because Kathleen's class's Vtable, the A vtable contains pointers to the methods would reduce the cost of method lookup to a simple indirection without search, followed by an ordinary function call.

20. As to **claim 6**, Jones teaches vtable is indexed by the name of function (the virtual function name af11, col 14, ln 1-55, Fig. 10).

21. Claims 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al (US. Patent 5,754,862) in view of Jordan (US. Patent 6,016,392) and further in view of Danel Liang (Java programming).

22. As to **claim 9**, Jones and Jordan do not explicit teach an argument. However, Liang teaches an argument (an argument page 118, sec: passing objects to methods).

23. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of Jones , Jordan and Liang because Liang's an argument would provide great flexible, modularity and reusability for developing software.

24. **As to claim 11**, it is an apparatus claim of claim 9; therefore, it is rejected for the same reasons as claim 9 above.

25. Claims 12, 13, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over TO (Object Reference casting) in view in view of AP (Arrays, pointers, pointer arithmetic).

26. **As to claim 12**, TO teach a first reference (reference, page 2, ln 26-50), an object (object, page 2, ln 26-50), a type (M1, page 2, ln 26-50), an interface (an interface, ln 26-50), a request to cast (cast, page 2, ln 26-50), a type defined by a class (class type, page 2, ln 26-50).

27. TO do not teach a pointer contained in the object, the pointer configured to point to a canonical base address of object. However, AP teaches a pointer contained in the object, the pointer configured to point to a canonical base address of object (the new pointer point to X [1], sec 7.3, page 1-3).

28. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of TO and AP because AP's the new pointer point to X [1] would allocate the specified number of contiguous cells of the indicated type.

29. **As to claim 13**, AP teaches the pointer is located at a predefined offset from the

Second pointer, and adjacent to the second pointer (the new pointer equals to X [1], sec 7.3, page 1-3).



30. As to claims 15, 16, they are apparatus claims of claims 12, 13; therefore, they are rejected for the same reasons as claims 15, 16 above.

31. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over TO (Object Reference casting) in view in view of AP (Arrays, pointers, pointer arithmetic) and further in view of Gartner et al (US. Patent 6,421,681 B1).

32. As to claim 14, TO and AP do not teach return the type defined by casting. However, Gartner teaches return the type defined by casting (return ... cast to object, col 18, l n 1-20).

33. It would have been obvious to one of the ordinary skill in the art at time the invention was made to combine the teaching of apply the teaching of TO, AP and Gartner because Gartner's return ... cast to object would make method for dispatch of interface calls more consistent.

#### **Response to the argument**

34. Applicant's amendments filed 5/15/2004 have been considered but they are not persuasive.

In the remarks, applicant argued (1) " the combination of these references is improper"

(2) " These pointer may allow more efficient dispatch of interface function and/or allow the efficient casting of references of and interface type into reference whose type is defined by the class implementation the interface"

(3) " There is no teaching or suggestion in AP for the use of pointer in a method to cast a reference to an object".

35. Examiner respectfully traversed applicant's remarks:

As to point (1), both Jones and Jordan are related to object oriented environment and both references teach the pointer of object to the table which points to the implementation function (Jones's reference: col 12, col 5, ln 15-53/col 7, ln 1-25col 12, ln 35-67/ Fig. 6) (Jordan's reference: col 3, ln 33-67/ Fig. 4).

As to point (2), the limitation "these pointer may allow more efficient dispatch of interface function and/or allow the efficient casting of references of and interface type into reference whose type is defined by the class implementation the interface" was not in claims 1, 7, 8, and 10.

As to point (3), the limitation "for the use of pointer in a method to cast a reference to an object" was not in claims 12, 15.

36. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to LeChi Truong whose telephone number is (703) 305 5312. The examiner can normally be reached on 8 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 703-305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

LeChi Truong

July 12, 2004

